RAIO-1117-57110

November 10, 2017

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 229 (eRAI No. 9101) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 229 (eRAI No. 9101)," dated September 14, 2017

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) response to the referenced NRC Request for Additional Information (RAI).

The Enclosures to this letter contain NuScale's response to the following RAI Question from NRC eRAI No. 9101:

- 09.02.02-4

Enclosure 1 is the proprietary version of the NuScale Response to NRC RAI No. 229 (eRAI No. 9101). NuScale requests that the proprietary version be withheld from public disclosure in accordance with the requirements of 10 CFR § 2.390. The proprietary enclosures have been deemed to contain Export Controlled Information. This information must be protected from disclosure per the requirements of 10 CFR § 810. The enclosed affidavit (Enclosure 3) supports this request. Enclosure 2 is the nonproprietary version of the NuScale response.

This letter and the enclosed responses make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Carrie Fosaaen at 541-452-7126 or at cfosaaen@nuscalepower.com.

Sincerely,

Jennie Wike
Manager, Licensing
NuScale Power, LLC

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A
Anthony Markley, NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 9101, proprietary

Enclosure 2: NuScale Response to NRC Request for Additional Information eRAI No. 9101, nonproprietary

Enclosure 3: Affidavit of Thomas A. Bergman, AF-1117-57111

Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 9101, proprietary

NuScale Power, LLC
1100 NE Circle Blvd., Suite 200 Corvalis, Oregon 97330, Office: 541.360.0500, Fax: 541.207.3928
www.nuscalepower.com

Enclosure 2:

NuScale Response to NRC Request for Additional Information eRAI No. 9101, nonproprietary

NuScale Power, LLC
1100 NE Circle Blvd., Suite 200 Corvalis, Oregon 97330, Office: 541.360.0500, Fax: 541.207.3928
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Response to Request for Additional Information
Docket No. 52-048

eRAI No.: 9101
Date of RAI Issue: 09/14/2017

NRC Question No.: 09.02.02-4

10 CFR 52.47(a)(2) requires that a standard design certification applicant provide a description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished.

10 CFR 52.47(c)(2) requires that a standard design certification of "a nuclear power reactor design that … uses simplified, inherent, passive, or other innovative means to accomplish its safety functions must provide an essentially complete nuclear power reactor design except for site-specific elements such as the service water intake structure and the ultimate heat sink, and must meet the requirements of 10 CFR 50.43(e)."

FSAR Tier 2, Table 9.2.2-1 specifies the design heat load for the reactor component cooling water system (RCCWS) to be 21 MBtu/hr and the design flow rate for the RCCWS pumps to be 660 gpm.

FSAR Tier 2, Figure 9.2.2-1, identifies that the RCCWs provides cooling to the following heat loads:

- Control rod drive mechanism (CRDM) Cooling Coils
- Chemical and volume control system (CVCS) non-regenerative heat exchangers (NRHX)
- Containment Evacuation System (CES) condensers and vacuum pumps
- Process sampling system (PSS) coolers and analyzer cooler temperature control units (TCUs)

To clarify that the RCCWS flow and heat load specified in Table 9.2.2-1 is sufficient to provide the necessary cooling for the RCCW heat loads identified in Figure 9.2.2-1, the applicant is requested to:

- Provide the heat loads of all the above systems
- Provide the flow rate required to each of the specified heat loads
- Discuss how the operators could know that there is insufficient heat removal capability in the RCCWS and what procedures would be required for the operators to take.

NuScale Response:

First and second bullet response regarding heat loads and flow rates:

As noted in FSAR Section 9.2.2.1, the RCCWS provides no safety-related function, is not credited for mitigation of design basis accidents, and has no safe shutdown functions. Also, as noted in FSAR Section 9.2.2.3, RCCWS cooling is not required for any safety-related or risk-significant components to perform their functions. While the CRDMs are safety-related due to their function of safe shutdown of the reactor, the electromagnetic drive coils and rod position indication that are cooled by RCCWS are part of the control rod drive system and do not impact the ability to safely shut down the reactor. The RCCWS heat removal information (heat loads and flow rates) was not provided originally in the FSAR because it does not affect the safety functions.

The two tables below contain preliminary expected heat loads and flow rates for components of the RCCWS. Table 1 contains heat loads and flow rates expected for normal operating condition while Table 2 contains heat loads and flow rates used for the purpose of sizing the equipment. Table 2 contains expected heat loads that could be experienced during operation evolutions that need to be included in the system sizing so that plant operation would not be limited by the RCCWS capacity. If the heat loads and flow rates in Tables 1 and 2 were to change, the revised heat loads and flow rates are not required to be provided in a revised RAI response as this information does not serve any safety or important to safety function.

Table 1. Normal Operation RCCWS Flow Rates and Heat Loads
{{

}}2(a),(c),ECI

Table 2. Sizing Basis RCCWS Flow Rates and Heat Loads
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}}2(a),(c),ECI

Third bullet response regarding what procedures would be required for the operators to take:

The RCCWS contains temperature and flow indication for every component heat load. Operating procedures will provide the operator with the ability to diagnose and respond to malfunctions.

The Plant Control System continuously monitors the components cooled by the RCCWS and sends that information to the Control Room Human-System Interface (HSI). If the RCCWS fails to cool any or multiple components, automatic actions (automated procedure) will occur to mitigate the abnormal occurrence and restore sufficient heat removal capability. If automatic actions fail to mitigate the abnormal event the operator will follow prescribed steps in alarm response procedures and abnormal system operating procedures until the event is mitigated and sufficient heat removal capability is restored.

With regards to operations procedure development, COL Item 13.5-2 requires that the applicant describe the site-specific procedures that operators use in the main control room and locally in the plant, including normal operating procedures, abnormal operating procedures, and emergency operating procedures.

Impact on DCA:

There are no impacts to the DCA as a result of this response.

Enclosure 3:

Affidavit of Thomas A. Bergman, AF-1117-57111

NuScale Power, LLC
1100 NE Circle Blvd., Suite 200 Corvalis, Oregon 97330, Office: 541.360.0500, Fax: 541.207.3928
www.nuscalepower.com

NuScale Power, LLC

AFFIDAVIT of Thomas A. Bergman

I, Thomas A. Bergman, state as follows:

1. I am the Vice President, Regulatory Affairs of NuScale Power, LLC (NuScale), and as such, I have been specifically delegated the function of reviewing the information described in this Affidavit that NuScale seeks to have withheld from public disclosure, and am authorized to apply for its withholding on behalf of NuScale.
2. I am knowledgeable of the criteria and procedures used by NuScale in designating information as a trade secret, privileged, or as confidential commercial or financial information. This request to withhold information from public disclosure is driven by one or more of the following:
    a. The information requested to be withheld reveals distinguishing aspects of a process (or component, structure, tool, method, etc.) whose use by NuScale competitors, without a license from NuScale, would constitute a competitive economic disadvantage to NuScale.
    b. The information requested to be withheld consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), and the application of the data secures a competitive economic advantage, as described more fully in paragraph 3 of this Affidavit.
    c. Use by a competitor of the information requested to be withheld would reduce the competitor's expenditure of resources, or improve its competitive position, in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.
    d. The information requested to be withheld reveals cost or price information, production capabilities, budget levels, or commercial strategies of NuScale.
    e. The information requested to be withheld consists of patentable ideas.
3. Public disclosure of the information sought to be withheld is likely to cause substantial harm to NuScale's competitive position and foreclose or reduce the availability of profit-making opportunities. The accompanying Request for Additional Information response reveals distinguishing aspects about the process by which NuScale develops its design parameters and flow rates.

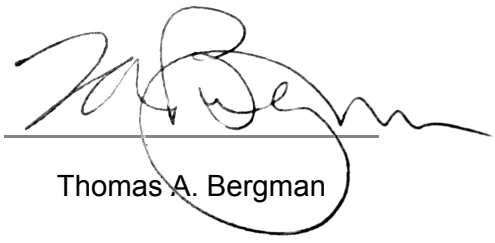
    NuScale has performed significant research and evaluation to develop a basis for this process and has invested significant resources, including the expenditure of a considerable sum of money.

    The precise financial value of the information is difficult to quantify, but it is a key element of the design basis for a NuScale plant and, therefore, has substantial value to NuScale.

    If the information were disclosed to the public, NuScale's competitors would have access to the information without purchasing the right to use it or having been required to undertake a similar expenditure of resources. Such disclosure would constitute a misappropriation of NuScale's intellectual property, and would deprive NuScale of the opportunity to exercise its competitive advantage to seek an adequate return on its investment.

4. The information sought to be withheld is in the enclosed response to NRC Request for Additional Information No. 229, eRAI No. 9101. The enclosure contains the designation "Proprietary" at the top of each page containing proprietary information. The information considered by NuScale to be proprietary is identified within double braces, "{{ }}" in the document.
5. The basis for proposing that the information be withheld is that NuScale treats the information as a trade secret, privileged, or as confidential commercial or financial information. NuScale relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC § 552(b)(4), as well as exemptions applicable to the NRC under 10 CFR §§ 2.390(a)(4) and 9.17(a)(4).
6. Pursuant to the provisions set forth in 10 CFR § 2.390(b)(4), the following is provided for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld:
    a. The information sought to be withheld is owned and has been held in confidence by NuScale.
    b. The information is of a sort customarily held in confidence by NuScale and, to the best of my knowledge and belief, consistently has been held in confidence by NuScale. The procedure for approval of external release of such information typically requires review by the staff manager, project manager, chief technology officer or other equivalent authority, or the manager of the cognizant marketing function (or his delegate), for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside NuScale are limited to regulatory bodies, customers and potential customers and their agents, suppliers, licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or contractual agreements to maintain confidentiality.
    c. The information is being transmitted to and received by the NRC in confidence.
    d. No public disclosure of the information has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or contractual agreements that provide for maintenance of the information in confidence.
    e. Public disclosure of the information is likely to cause substantial harm to the competitive position of NuScale, taking into account the value of the information to NuScale, the amount of effort and money expended by NuScale in developing the information, and the difficulty others would have in acquiring or duplicating the information. The information sought to be withheld is part of NuScale's technology that provides NuScale with a competitive advantage over other firms in the industry. NuScale has invested significant human and financial capital in developing this technology and NuScale believes it would be difficult for others to duplicate the technology without access to the information sought to be withheld.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 11/10/2017.



Thomas A. Bergman